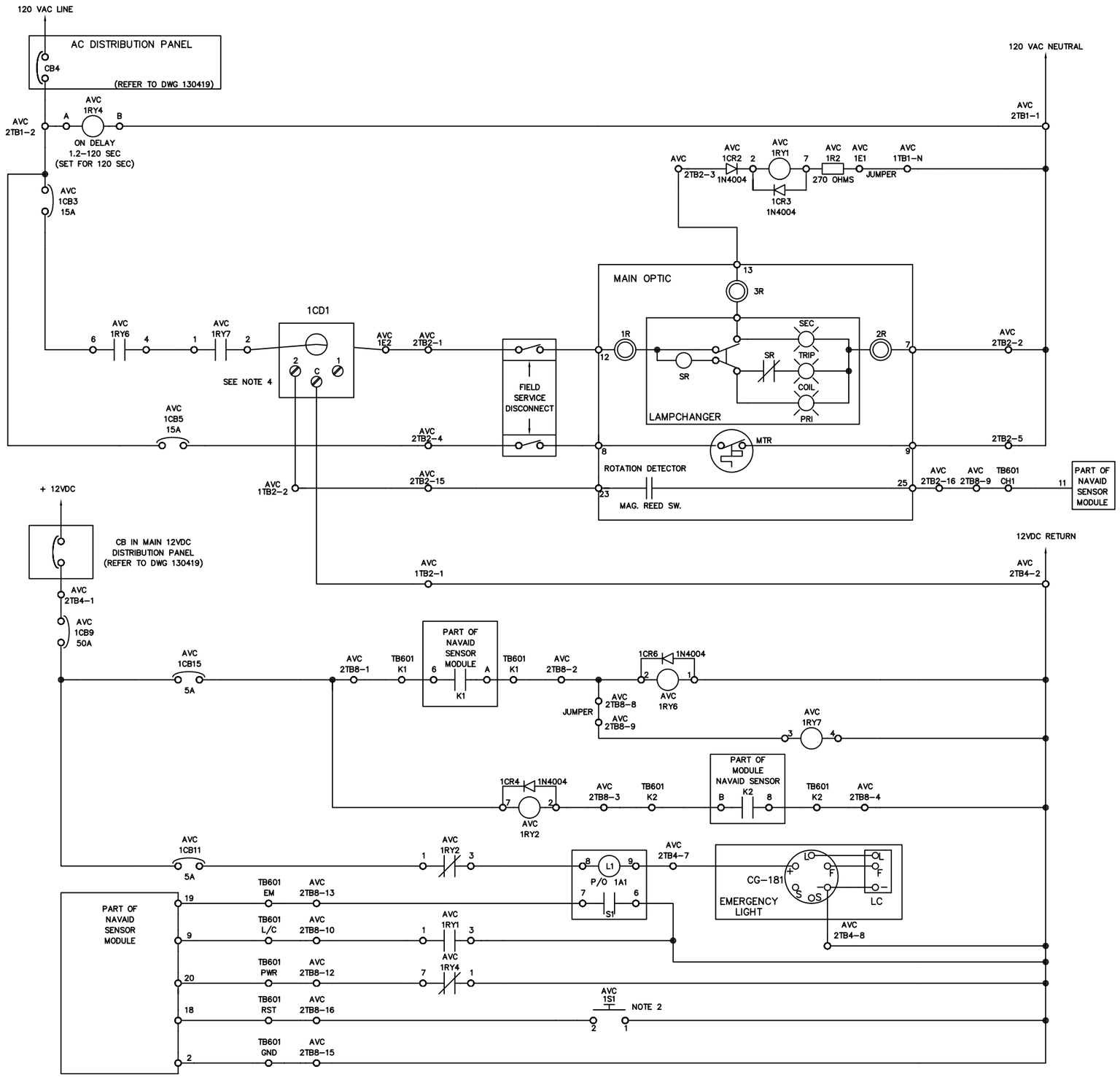


## SEQUENCE OF OPERATION

INITIAL CONDITIONS:

ALL 12VDC AND 120VAC POWER SECURED. ALL RELAYS SHOWN DE-ENERGIZED.

SEQUENCE:

OPEN FIELD SERVICE DISCONNECT SWITCHES (G6, F6) TO MAIN LIGHT LAMPCHANGER AND MOTOR CIRCUIT.
LOAD LAMPCHANGER WITH APPLICABLE LAMPS AND COCK LAMPCHANGER TO PUT THE PRIMARY LAMP IN POSITION AS THE OPERATING LAMP.
CLOSE SERVICING DISCONNECT SWITCHES TO MAIN LIGHT LAMPCHANGER AND DRIVE MOTOR. CLOSE CB IN 12VDC DISTRIBUTION PANEL (E2).
ENERGIZE ALL 12VDC LIGHT CONTROL CIRCUIT BY CLOSING 1CB9 (E2) BATTERY POWER; 1CB15 (D3), AVC; AND 1CB11 (C3), EMERGENCY LIGHT.
ENERGIZE ALL 120VAC LIGHT POWER CIRCUITS BY CLOSING CB4 (J1), AVC POWER IN THE MAIN 120VAC DISTRIBUTION PANEL, 1CB3 (I1), LIGHT; AND 1CB5 (F4), MOTOR. THE MAIN LIGHT WILL NOW ROTATE.
WHEN TIME DELAY RELAY 1RY4 (I2) TIMES OUT, 1RY4 CONTACT (B5) OPENS PROVING AN AUTOMATIC POWER RESET TO THE NAVAID SENSOR MODULE. THIS DELAY ASSURES THAT ALL 120VAC POWERED EQUIPMENT HAS HAD TIME TO STABILIZE.
NAVAID SENSOR MODULE K1 (D5) CONTACTS CLOSE TO ENERGIZE 1RY6 (D7) AND 1RY7 (D8). 1RY6 (G3) AND 1RY7 (G4) CONTACTS CLOSE APPLYING 120VAC POWER TO THE PRIMARY LAMPS. THE MAIN LIGHT IS NOW LIT AND ROTATING.
CURRENT SENSOR 1CD1 DETECTS THE CURRENT FLOW TO THE LAMP AND CLOSES ITS INTERNAL SWITCH WHEN THE CURRENT FLOW IS GREATER THAN ITS PRESET THRESHOLD CURRENT. THE ROTATION DETECTOR CONTACT (F7) CLOSES MOMENTARILY ONCE EACH REVOLUTION OF THE MAIN LIGHT.
THE SERIES CIRCUIT CONTAINING 1CD1 CONTACT (G4) AND THE ROTATION DETECTOR CONTACT (F7) PROVIDES A PULSATING 12VDC GROUND TO THE NAVAID SENSOR CARD CHANNEL #1 (F11).
IF THE TIME INTERVAL BETWEEN PULSATIONS EXCEEDS 1.5 TIMES THE TIME FOR ONE REVOLUTION OF THE MAIN LIGHT FOR ANY REASON, THE NAVAID SENSOR MODULE ACTIVITY CHANNEL #1 SENSES IMPROPER OPERATION AND OPENS K1 (D4) AND K2 (B5) CONTACTS.
OPENING K1 CONTACT DE-ENERGIZES 1RY6 (D7) AND 1RY7 (D8), OPENING 1RY6 AND 1RY7 CONTACTS TO DE-ENERGIZE THE MAIN LIGHT.
OPENING K2 CONTACTS DE-ENERGIZES 1RY2 (C6), CLOSING 1RY2 (C5) CONTACT TO ENERGIZE THE EMERGENCY LIGHT.
THE DC CURRENT PULSES TO THE EMERGENCY LIGHT ARE SENSED BY THE DC CURRENT DETECTOR (C6), L1 AND S1 CONTACTS CLOSE EACH TIME THE EMRGENCY LIGHT FLASHES. THESE PULSATIONS ARE FED TO THE NAVAID SENSOR MODULE (B3) EM CHANNEL WHICH MONITORS THE EMERGENCY LIGHT IN THE SAME MANNER THE MAIN LIGHT IS MONITORED.
THE MAIN LIGHT LAMPCHANGER POSITION IS INDICATED BY SIGNAL FROM THE LAMPCHANGER WHICH ENERGIZES 1RY1 (I8) AFTER EITHER LAMPCHANGER ROTATES TO ENERGIZE ITS SECONDARY LAMP CIRCUIT. THIS CAUSES 1RY1 CONTACTS (B5) TO CLOSE AND THEREFORE GROUND THE NAVAID SENSOR MODULE L/C, LAMPCHANGER MONITORING TERMINAL.
THE MAIN LIGHT LAMPCHANGER OPERATES AS FOLLOWS: WHEN THE PRIMARY LAMP BURNS OUT, THE SR RELAY IS DE-ENERGIZED, CLOSING ITS SR CONTACTS TO ENERGIZE ITS TRIP SOLENOID COIL. THIS RELEASES THE SPRING LOADED LAMPCHANGER WHICH ROTATES TO DISCONNECT THE BURNED OUT PRIMARY LAMP AND CONNECT THE SECONDARY LAMP.

NOTES:

1. TB-601 LOCATED IN NAVAID SENSOR PANEL. ALL OTHER PARTS LOCATED INSIDE AVC UNLESS NOTED.
2. THIS SWITCH RESETS THE NAVAID SENSOR MODULES MANUALLY, OTHERWISE IT PERFORMS THE SAME FUNCTION AS 1RY4 CONTACT (B5) AS DESCRIBED IN THE SEQUENCE OF OPERATION. THE RESET FUNCTION CLOSES K1 AND K2 CONTACTS.
3. SEE AVC FIELD CHANGE #3 FOR MAIN LIGHT CURRENT SENSOR INSTALLATION AND SET UP.

| REV. | DATE | APPR. | DESCRIPTION | BY |
|---|---|---|---|---|
| B | 12/98 | HRC | ADD FIELD CHANGE #3 TO AVC AND DELETE NOTE 3. | STN |
| A | 10/77 | HRC | ADD RESET SWITCH AND NOTES 2 & 3. | HRC |

DESIGNED: RAD
DRAWN:
TRACED:
CHECKED: R.A.DOUGHTY
REVIEWED BY: W.B. WAFF
CH ELECT SECT
REVIEWED BY: H.R.CLEVELAND
CH SYS SECT
REVIEWED BY: C.W.SCHECK
CH SUP EQ BR

U.S. COAST GUARD HEADQUARTERS
CIVIL ENGINEERING

# STANDARD AID TO NAVIGATION
# DCB-24 ROTATING OPTIC WITH EMERGENCY LIGHT TROUBLE SHOOTING DIAGRAM

APPROVED: K. D. URFER, CHIEF OF DIVISION
DATE: 11/15/76

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES.
TOLERANCES: DIM.
ANG.

DRAWING NUMBER: 130702
REV.: B
SCALE: NONE
SHEET 1 OF 1